Kohsaku YAMADA*: **Notes on Latin American species of the genus *Radula*, Hepaticae (2)****

山田耕作*: ラテンアメリカ産のケビラゴケ属（苔類）について (2)

2. A small collection from Haiti.

The hepatics of Haiti are very poorly known and about 53 species have been recorded (Fulford 1982). Among them are included only two species of *Radula*, *R. microlobula* and *R. ramulina*. In 1984, Dr. W.S. Judd made an extensive collection of bryophytes in two recently established parks in Haiti, and I was able to study the *Radula* specimens in this collection. Among them I have recognized 7 species, including one species new to science and 4 species new to the Haitian flora.

1) *Radula cubensis* Yamada, J. Hattori Bot. Lab. 54: 241 (1983).

Specim. exam.: Massif de la Hotte, foothills of S of Morne Formon, Bois Formon, ca 1250 m, moist forest on limestone, W.S. Judd 3703 (FLAS, NICH).

Distr.: Cuba. New to Haiti!

2) *Radula surinamensis* Steph., Hedwigia 23: 136 (1884).

Specim. exam.: Massif de la Hotte, Bois Formon, S of Morne Formon, ca 950–1050 m, moist forest on limestone, on tree trunk, W.S. Judd 3610 + *R. inflexa* (FLAS, NICH).

Distr.: Cuba, Bahamas, Jamaica, Dominica, Puerto Rico, Guadeloupe, Surinam, Galapagos Islands. New to Haiti!

3) *Radula inflexa* Gott. ex Steph., Hedwigia 23: 148 (1884).

Specim. exam.: Massif de la Hotte, Macaya National Park, Pic Macaya (highest peak in the la Hotte Range), ca 2300–2340 m, moist forest of *Pinus occidentalis*, W.S. Judd 4200, + 3610 (FLAS, NICH).

Distr.: Jamaica, Guadeloupe, Dominica, Martinique, Guatemala, Brazil. New to Haiti!

4) **Radula juddii** Yamada, sp. nov. (Fig. 1)

Planta mediocris, olivaceo-viridis; caulis regulariter dichotome ramosus; lobi

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** Continued from Misc. Bryol. Lichenol. 9: 121–123 (1982).

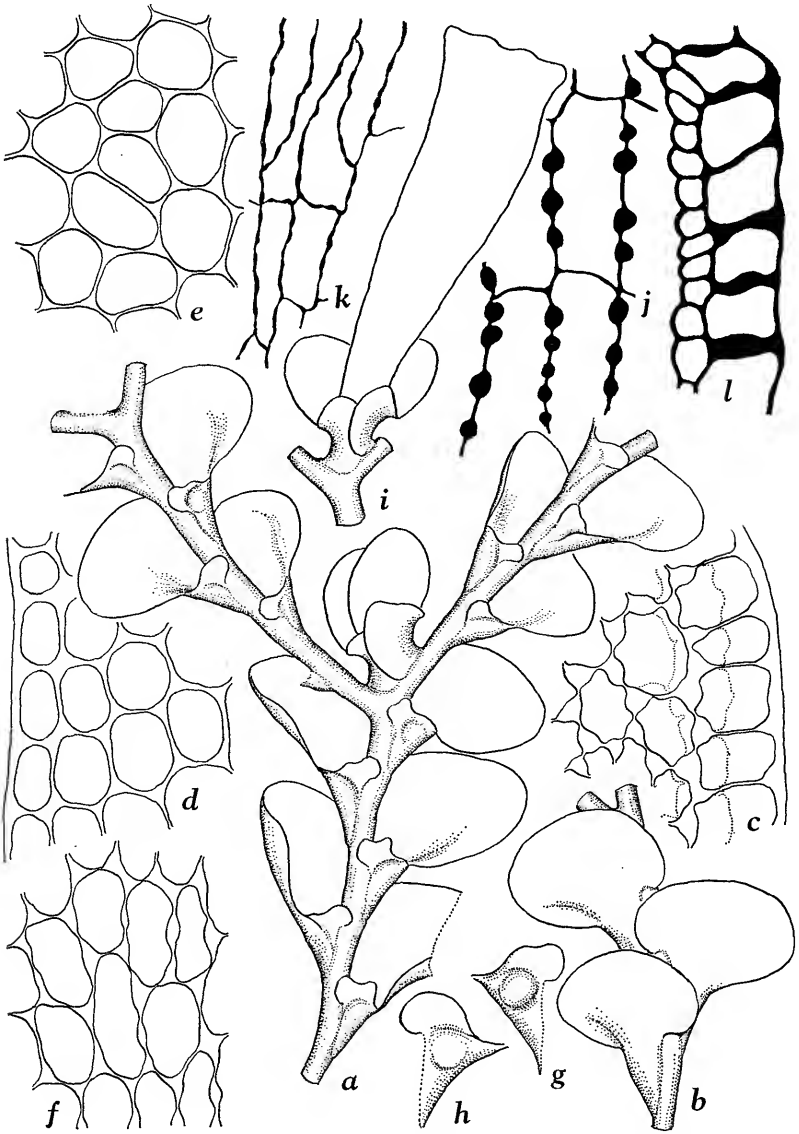

Fig. 1. *Radula juddii* Yamada. *a*. Portion of stem with female bracts, ventral view, ×16. *b*. Leaves on stem, dorsal view, ×16. *c*. Portion of cross-section of stem, ×480. *d–f*. Cells of lobe of stem leaf, *d* from margin, *e* from middle, *f* from base, all ×480. *g*, *h*. Leaf-lobules, ×23. *i*. Perianth, ×16. *j*, *k*. Capsule walls, *j* from outer view, *k* from inner view, both ×480. *l*. Portion of cross-section of capsule, ×480. Drawn from Holotype.

foliorum caulinorum laxe imbricati, in plano ovati vel anguste ovati, apice obtuso, margine anguste recurvo; lobuli oblique patuli, subrhombici vel subquadrati, basi caulem 1/2-2/3 tegente, rotundato, carina sub anglo 30° patente, subrecta vel leviter arcuata, decurrente. Dioica (androecia haud visa). Gynoecium in ramo vel caule terminale; perianthium plano-cylindricum.

Plants medium-sized, olive-green in herb. Stem 20-25(-40) mm long, ca. 0.17 mm in diam., with leaves 2.1-2.4 mm wide, regularly dichotomously branched, branches ca. 0.15 mm in diam., with leaves 1.7-2.1 mm wide; stem 8 cells thick, cortical cells with thickened walls, brown, medullary cells as large as cortical cells, thin-walled with large, nodulose trigones, pale yellow. Leaf-lobes loosely imbricate, widely spreading, concave, when flat ovate to narrowly ovate, 1.0-1.3 mm long, 0.7-0.9 mm wide, apices obtuse, ventral margins often narrowly incurved, dorsal bases arched, slightly auriculate, extending beyond the farther edge of stem, insertions substraight; marginal cells 8-10×17-19 μm, somewhat thick-walled with minute trigones, median cells 15-19×21-26 μm, thin-walled with minute trigones, basal cells 13-16×23-30 μm, thin-walled with large, nodulose trigones; cuticle smooth; leaf-lobules remote, obliquely spreading, subrhombic or subquadrate, ca 1/3 the lobe-length, 0.4-0.45 mm long, 0.25-0.29 mm wide, apices obtuse, somewhat depressed to the lobe, abaxial margins substraight, usually sinuate at middle, decurrent to narrowly incurved ventral margins of the lobes, adaxial margins substraight toward the rounded bases, often weakly sinuate at middle, basal portions covering the stem 1/2-2/3 of the stem-width (never extending beyond the stem), insertions substraight, long, carinal regions inflated; rhizoid-initial areas ±convex, rhizoids in a bundle, pale brown to subhyaline; keels spreading at angles of ca 30° with the stem, 0.46-0.6 mm long, substraight to slightly arched, usually decurrent, sinuses very wide.

Dioicous? (androecium not seen). Gynoecium terminal on branch or stem, with two subfloral innovations; bract-lobe oblong-ovate with obtuse apex, bract-lobule subrectangular with strongly sinuate keel; perianth flat-cylindric, ca 3.5 mm long, ca 1 mm wide at mouth, mouth weakly undulate; capsule-wall thin, in two layers, cell-walls of inner layer with poorly developed secondary thickenings, cell-walls of outer layer thin with red brown secondary thickenings.

Specim. exam.: Massif de la Hotte, Bois Formon, S of Morne Formon, ca 950-1050 m alt., moist forest on limestone, Jan. 23, 1984, W.S. Judd 3592--holo-

type (FLAS; isotype in NICH), 3577, 3587; Massif de la Hotte, Bois Formon, S of Morne Formon, moist forest on limestone, ca 975 m, moist limestone ravine, J. D. Skean 1221 (FLAS, NICH).

Distr: Known only from the Bois Formon region, Massif de la Hotte, Haiti.

The diagnostic characters of the present new species are 1) the regularly dichotomous branching of the stem, 2) the loosely imbricate, narrowly ovate to ovate leaf-lobes often with narrowly incurved ventral margins, 3) the subrhombic or subquadrate leaf-lobules with rounded bases (covering 1/2–2/3 of the stem) and decurrent keels, and 4) the keel spreading at angles of ca 30° with the stem.

This new species is closely related to *Radula husnotii* Castle, a species which is widely distributed in Latin America. However, the latter species differs from *R. Juddii* by 1) the slightly remote to contiguous, ovate leaf-lobes with the ventral margins not incurved, 2) the leaf-lobules covering 1/4 (or less) of the stem, 3) the subquadrate leaf-lobules with nearly straight and somewhat decurrent keels, and 4) the keel spreading at angles of 40–50° with the stem.

5) *Radula korthalsii* Steph., Hedwigia **23**: 133 (1884).

Specim. exam: Massif de la Selle, La Visite National Park, Truing Marassa, a sinkhole NW of "Park headquaters" in pine forest, S of Morne La Visite, epiphyte, W. S. Judd 4618 (FLAS, NICH).

Distr.: Venezuela, St. Vincent, Brazil, Puerto Rico. New to Haiti!

6) *Radula microlobula* Castle, J. Hattori Bot. Lab. **21**: 35 (1955).

Specim. exam.: Massif de la Hotte, Bois Formon S of Morne Formon, moist forest on limestone, ca 975 m, J. D. Skean 1216 (FLAS, NICH).

Distr.: Cuba, Jamaica, Haiti.

7) *Radula voluta* Tayl., in Gott. et al., Syn. Hep.: 255 (1845).

Specim. exam.: Massif de la Selle, La Visite National Park, "The Depression", Pinelands W of "Park headquarters", W. S. Judd 4636 (FLAS, NICH); Massif de la Selle, La Visite National Park, ravine of Raviere Blanch crossed by road from Sequin to Furcy, W of "Park headquarters", ca 1800 m, S of Morne la Visite, ravine slope, W. S. Judd 4270 (FLAS, NICH).

Distr.: England, North America (Mescall et al. 1980, Schuster 1980), Venezuela (Yamada 1982), Haiti (Castle 1965, as *Radula ramulina* Tayl.).

The present species is very closely related to *Radula ramulina* Tayl., a species which is widely distributed in Latin America. The differences between

these two species were given by Castle (1965) and Schuster (1980). Castle (1965) separated them only by geography in the key to species (in sect. Densifoliae) and did not clarify the relationship between them. Later, Schuster (1980) discussed them and wrote, "the leaf-lobules of *R. ramulina* are a little more bluntly pointed than *R. voluta*, and the volute lobule base is even more remarkable and more coild, almost snail-like, being coild back over itself". However, the nature of voluted bases of leaf-lobules in *R. ramulina* are extremely variable even in same plants. The separation of these species by a single, variable character seems to be very difficult.

I wish to express my sincere thanks to Dr. W.S. Judd for giving me an opportunity to study interesting *Radula* specimens, and to Dr. S. Hattori of the Hattori Botanical Laboratory and Dr. H. Inoue of National Science Museum, Tokyo, for their kind critical advice.

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中南米にあるハイチ島の *Radula* 属（苔類）は殆ど知られていなかった。今回，同島で Dr. W.S. Judd によって採集された標本を調べた結果，その中から７種を見出したが，その内の１種が新種であったので *Radula juddii* Yamada として記載を行った。また，４種はハイチ島から初めての記録であった。